HICKOK

INSTRUCTION MANUAL

for

MODEL 6000A

DYNAMIC MUTUAL CONDUCTANCE TUBE TESTER

AUG 19 1968
INLAND TESTING LABORATORIES
6401 OAKTON STREET
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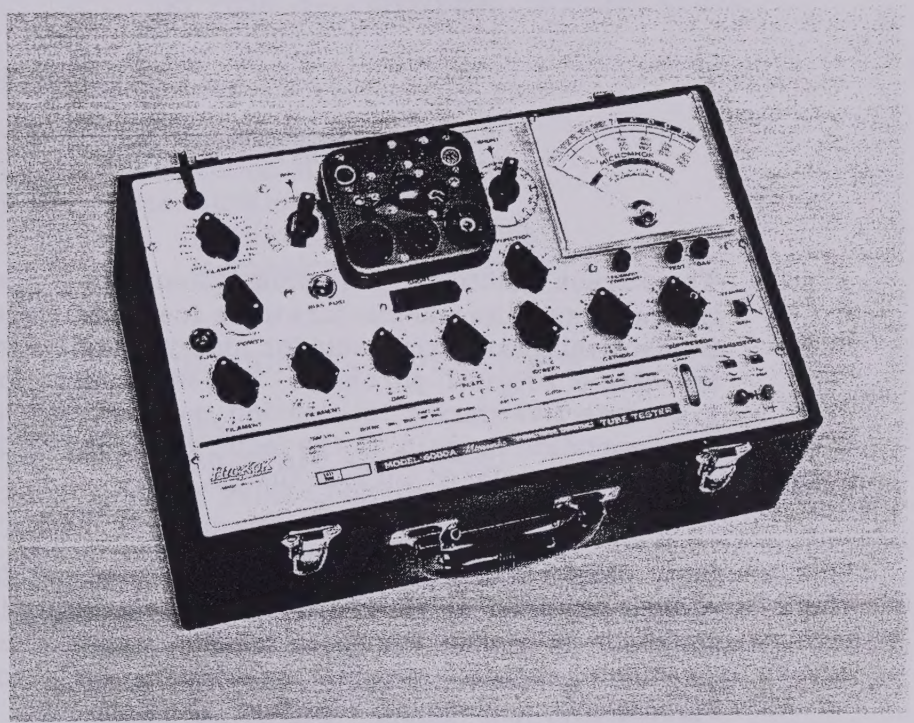
THE HICKOK ELECTRICAL INSTRUMENT CO.



DYNAMIC MUTUAL CONDUCTANCE
TUBE TESTER

MODEL 6000A

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The Hickok Electrical Instrument Company warrants instruments of its manufacture to be free from defects in material and workmanship for ninety (90) days from the date of original purchase. Any instrument found to be defective during this period may be returned, transportation prepaid, to the factory for repair, or at our option, replaced without charge.

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RETURNING EQUIPMENT FOR REPAIR

Before returning any equipment for service, the factory must first be contacted, giving the nature of the trouble. Instructions will then be given for either correcting the trouble or returning the equipment. Upon authorization, this equipment should be forwarded directly either to the Hickok factory address at 10626 Leuer Avenue, Cleveland, Ohio, 44108, or to a designated service station in your locality.

TABLE OF CONTENTS

SECTION 1 -- GENERAL INFORMATION

Paragraph		Page
1-1	Functional Description	1
1-2	Instruction Manual Changes	2
1-3	Specifications	2
	a. Electrical Specifications	2
	b. Mechanical Specifications	2

SECTION 2 -- OPERATOR'S SECTION

2-1	General	3
2-2	Inspection and Adjustment	3
2-3	Front Panel Controls and Connectors	3
2-4	Preparation for Use	5
2-5	Test Procedures	5
	a. Filament Continuity Test	5
	b. Shorts Test	6
	c. Quality Test	6
	d. Mutual Conductance Test	7
	e. Rectifiers, Diodes, and Thyratrons	7
	f. Gas (Grid Current) Test	7
	g. Life Test	7
	h. Transistors (NPN or PNP)	8
	i. Rectifier Tests - Copper Oxide, Selenium, and Silicon	9
	j. Diode Tests - Silicon and Germanium	10
	k. Pilot Lamp Test	10

SECTION 3 -- CIRCUIT DESCRIPTION AND TROUBLESHOOTING

3-1	Overall Functional Description	11
3-2	Troubleshooting	11

SECTION 4 -- PARTS LIST

4-1	Introduction	13

INSTRUCTIONS

FOR MODIFICATION OF

TUBE TESTER MODEL 6000A
(from 115 volts a. c. to 230 volts a. c. operation)

The Model 6000A Tube Tester is designed to operate on either 115 volts or 230 volts. It is shipped from the factory to operate on 115 volts. If 230 volt operation is desired, it is necessary to change the wiring of the power transformer from a parallel hook-up to a series hook-up. For parallel and series hook-ups, see the schematic wiring diagram in the rear of this manual.

For modification of the Model 6000A, from 115 volts to 230 volts, proceed as follows:

a. POWER TRANSFORMER

(1) Disconnect the black wire which is connected to the lug marked (W) and disconnect the white-black wire which is connected to the lug marked (X). Both located on transformer.

(2) Splice together and solder the two above wires. Insulate connection with electrical insulating tape.

(3) Do not disturb the other wires which are connected to the lugs marked (W) and (X). Inspect (W) and (X) for good electrical connections.

b. LINE FUSE

(1) Replace the No. 81 fuse lamp with a No. 63 lamp.

c. CALIBRATION CHECK

Plug the Model 6000A into a 230 v. a. c. power source, and turn the LINE ADJUST to the ON position. The meter needle will deflect upscale to the area marked LINE TEST. No further calibration is necessary.

d. For modification of the Model 6000A from 230 volts to 115 volts, reverse the above procedure.

SECTION 1

GENERAL INFORMATION

1-1 FUNCTIONAL DESCRIPTION

The Hickok Model 6000A Dynamic Mutual Conductance Tube Tester is used for testing the important conditions of tubes. It is designed for accuracy, portability, simplicity of operation, on 115 volts or 230 volts. It provides filament voltages from 0.6 to 117 volts in 19 steps.

The Model 6000A is capable of testing and measuring mutual conductance and the life expectancy of vacuum tubes used in television, radio, and transmitting tubes delivering less than 25 watts of power. Transistors, Diodes, Compactrons, Novars, and Nuvistors can be checked on the Model 6000A. Mutual Conductance (GM) values are indicated on the test meter in one of three scales, 0-3000, 0-6000, and 0-15,000 micromhos. The value of GM is determined by the setting of the SHUNT control.

Mounted on the tube mounting plate are eight tube sockets used for testing various tubes. A built-in roll chart is provided to give test data for more than 1350 vacuum tubes normally encountered in the servicing of entertainment type electronic equipment. The roll chart is replaceable and is revised semi-annually to include tube data available at the time of each printing. Revised roll charts can be ordered directly from the factory.

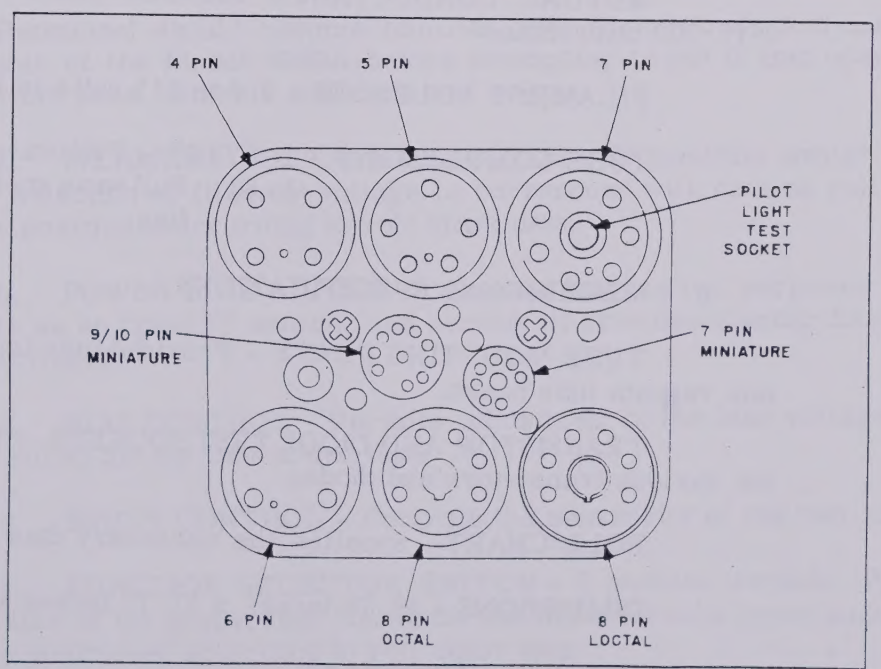


Figure 1-1. Accessory Tube Mounting Plate

Figure 1-1 illustrates the Accessory Tube Mounting Plate which is available for testing older type tubes and pilot lights. The tube mounting plate can be ordered directly from the factory under Hickok part number 1050-145, and consists of the following tube sockets: 4 pin, 5 pin, 6 pin, 7 pin (for testing pilot lights), 8 pin octal, 8 pin loctal, 7 pin miniature, and a 9/10 pin minature. When shipped from the factory it is completely wired for use on the Model 6000A. When it is desired to test older type tubes, remove the tube mounting plate mounted on the front panel by means of the two large screws, and plug the accessory tube mounting plate (shown in figure 1-1) into the 12 pin plug on the top panel. Replace screws.

1-2 INSTRUCTION MANUAL CHANGES

Due to the Hickok policy of continued product improvement, sometimes engineering changes are made before they can be incorporated in the instruction manual. When this situation occurs an amendment sheet and/or a new schematic wiring diagram will be added to this manual until such time as a new manual can be printed. Thus you are assured that your information is up-to-date and applies to your particular instrument.

1-3 SPECIFICATIONS

a. ELECTRICAL SPECIFICATIONS

POWER REQUIREMENTS - 115 volts or 230 volts, 50-70 cycles, 40 watts.

MUTUAL CONDUCTANCE RANGES (GM) - 0-3000, 0-6000, 0-15,000 micromhos

FILAMENT VOLTAGES - 0.6 to 117 volts in 19 steps.

TUBE COMPLEMENT - 1 5Y3GT - Full wave vacuum rectifier
1 83 - Full wave mercury vapor rectifier

b. MECHANICAL SPECIFICATIONS

TUBE MOUNTING PLATE - Provides tube test sockets for various vacuum tube bases.

TRANSISTOR AND DIODE TEST SOCKETS - Provide test sockets for various transistors and diodes.

ROLL CHART - Supplies the necessary data for testing tubes.

DIMENSIONS - 16.75 inches x 11.75 inches x 7.5 inches.

WEIGHT - 16 pounds net

FINISH - Red leatherette portable case, with detachable lid.

SECTION 2

OPERATOR'S SECTION

2-1 GENERAL

The Model 6000A Mutual Conductance tube tester can test vacuum tubes, rectifier tubes, thyratrons, transistors, diodes, and rectifiers. It can measure Mutual Conductance, Grid Current, Filament Continuity, Shorts, and Leakage currents for all vacuum tubes. It also provides "GOOD-BAD" quality tests for NPN and PNP transistors and a forward conduction efficiency test on semiconductor diodes.

2-2 INSPECTION AND ADJUSTMENT

Before placing the Model 6000A into operation, visually inspect it for any physical damage such as broken or loose knobs, broken meter cover, etc. All damage claims must be made to the carrier within 48 hours of receipt of the equipment. A damage report sheet is included with this manual giving detailed instructions for filing a damage report.

All calibration controls have been preset at the factory, therefore no adjustment of the Model 6000A is necessary prior to operation.

2-3 FRONT PANEL CONTROLS AND CONNECTORS

Personnel should become familiar with the controls and operating features of the Model 6000A before attempting to put it into operation. The front panel controls are explained below:

a. FILAMENT VOLTAGE SELECTOR - 20 position switch - permits selection of filament voltage to correspond with data on roll chart. To be positioned according to roll chart data.

b. POWER LINE ADJUST - A rheostat that has two purposes: First, it acts as an ON-OFF switch, and second, it provides standardization of test voltages.

c. BIAS CONTROL - Permits adjustment of the bias voltage (from 0-40 volts) for the tube under test.

d. SHUNT CONTROL - Controls the sensitivity of the test meter.

e. FUNCTION SELECTOR SWITCH - 8 position switch. Permits selection of the proper test circuit for the different tube types under test. To be positioned according to roll chart data.

f. FILAMENT SELECTOR - 14 position switch. Permits selection of tube pin to which filament voltage (positive) is applied. To be positioned according to roll chart data.

g. FILAMENT SELECTOR - 14 position switch. Permits selection of tube pin to which filament voltage (negative) is applied. To be positioned according to roll chart data.

h. GRID SELECTOR - 14 position switch. Permits selection of tube pin to which grid voltage is applied. To be positioned according to roll chart data.

i. PLATE SELECTOR - 14 position switch. Permits selection of tube pin to which plate voltage is applied. To be positioned according to roll chart data.

j. SCREEN SELECTOR - 14 position switch. Permits selection of tube pin to which screen voltage is applied. To be positioned according to roll chart data.

k. CATHODE SELECTOR - 14 position switch. Permits selection of cathode pin connection. To be positioned according to roll chart data.

l. SUPPRESSOR SELECTOR - 14 position switch. Permits selection of suppressor pin connection. To be positioned according to roll chart data.

m. FILAMENT CONTINUITY - 2 position pushbutton. When depressed the meter will indicate if the filaments of the tube are continuous or opened.

n. TEST - 2 position pushbutton. Must be depressed for all tests, EXCEPT FOR TESTING TRANSISTORS AND DIODES.

o. GAS - 2 position pushbutton. When depressed simultaneously with the TEST button, the meter will indicate grid current.

p. ROLL CHART COLUMNS

(1) TUBE TYPE - List of all tubes in numerical-alphabetical order that can be tested on the Model 6000A.

(2) FIL - The switch marked FILAMENT in the upper left corner of the panel is used to set the proper voltage for the filament of the tube to be tested.

(3) SELECTORS - This row of seven switches across the front panel above the roll chart is for the purpose of conducting voltages to the base pins of the tube under test. This column consists of letters and numbers. EXAMPLE: JR-6237-5. Starting at the left, the first knob FILAMENT is turned until it points to the letter J; the second knob FILAMENT is turned to R; the third knob GRID is turned to 6; the fourth knob

PLATE is turned to 2; the fifth knob SCREEN is turned to 3; the sixth knob CATHODE is turned to 7; and the seventh knob SUPPRESSOR is turned to 5.

(4) BIAS - This column lists the BIAS settings for various tubes to be tested.

(5) SHUNT - This column lists the meter SHUNT dial settings for the various tubes to be tested.

(6) FUNCTION and MUT. COND. - The first column lists the proper setting for the FUNCTION Selector switch. The second column (with numbers) lists the value of mutual conductance that is normal for the average tube.

(7) NOTATIONS - This column lists special notes pertaining to special tests and/or notes pertaining to the tube under test.

2-4 PREPARATION FOR USE

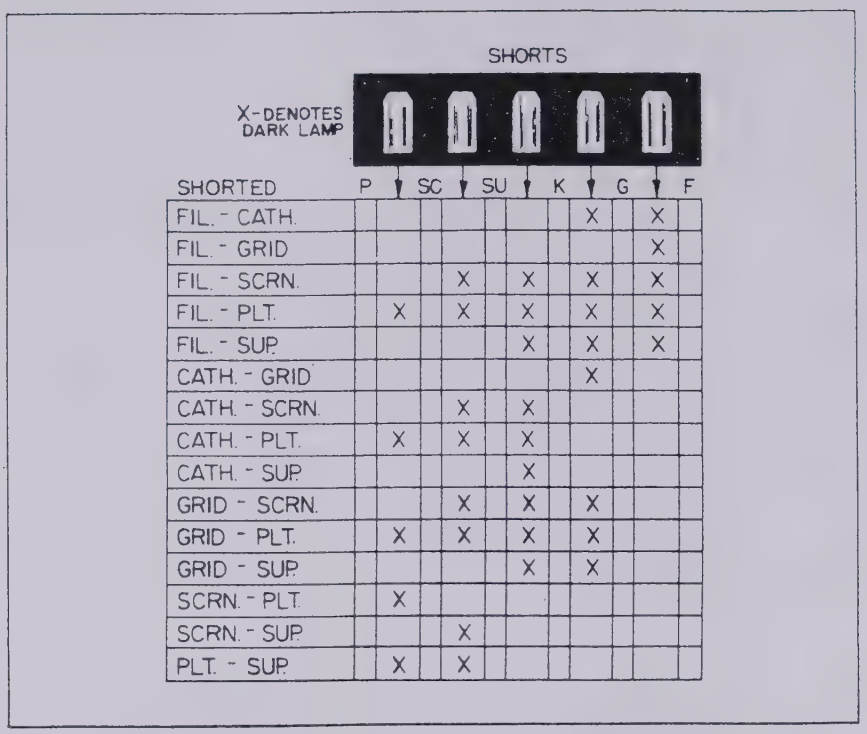
The Model 6000A is designed for operation on 115 volts or 230 volts, 50-70 cycle line. Turn the POWER LINE ADJUST to ON and adjust it until the needle on the meter face is directly in line with LINE TEST. Set the front panel controls according to the data on the roll chart. After the front panel controls have been set, place the tube to be tested into the proper socket. Allow at least 30 seconds for the tube to achieve its operating temperature.

2-5 TEST PROCEDURES

> CAUTION
>
> Do not insert tube to be tested into test socket until correct settings of all controls have been made.

a. FILAMENT CONTINUITY TEST

After the FILAMENT voltage selector and the two FILAMENT SELECTORS are set, the tube to be tested can be inserted into the proper test socket. Adjust the POWER LINE ADJUST until the needle on the meter is directly over LINE TEST on the meter face. To check the continuity of the filaments of the tube under test, depress the button marked FILAMENT CONTINUITY. If the filaments of the tube under test are good, the needle on the meter will remain near LINE TEST, and if they are open, the needle will drop back to zero.



SHORTED	P	SC	SU	K	G	F
FIL. - CATH.				X		X
FIL. - GRID						X
FIL. - SCRN.		X		X		X
FIL. - PLT.	X	X		X		X
FIL. - SUP.			X	X		X
CATH. - GRID				X		
CATH. - SCRN.		X	X			
CATH. - PLT.	X	X	X			
CATH. - SUP.			X			
GRID - SCRN.		X	X	X		
GRID - PLT.	X	X	X	X		
GRID - SUP.			X	X		
SCRN. - PLT.	X					
SCRN. - SUP.		X				
PLT. - SUP.	X	X				

Table 2-1. Locating Shorted Elements

b. SHORTS TEST

Located under a lamp shield, in the center of the front panel, are five glow lamps which will glow when the tube tester is turned ON. If any element or elements of the vacuum tube under test are shorted, the glow in one or more of the lamps will disappear, indicating a shorted tube. Shorted tubes should be discarded without further testing.

NOTE

Check all SELECTORS settings so they correspond with data on roll chart for tube under test.

Table 2-1, Locating Shorted Elements, indicates which elements are shorted and which lamp or lamps are not glowing. The (X) indicates which lamps are dark.

c. QUALITY TEST

If the tube passes the Short Test, a Quality Test should be made. Ascertain that all of the controls are set as indicated on the roll chart. Depress the red button marked TEST. Meter needle will now indicate

condition of tube. If the vacuum tube is good, the needle on the test meter will remain in the area marked LINE TEST, or move into the GOOD area. If the tube is faulty, the needle on the test meter will move into the REPLACE area. Disregard the MICROMHOS scale.

d. MUTUAL CONDUCTANCE TEST

The SHUNT setting listed on the roll chart is used to read the condition of the tube being tested on the REPLACE-GOOD scale. The number listed on the roll chart under the heading of FUNCT. AND MUT. COND. indicates the Mutual Conductance of the tube. The SHUNT control has three red dots stamped into the metal and marked 3000, 6000, and 15,000. These numbers correspond with the meter scale to be used. The red dots indicate the exact setting of the shunt control for the separate scales. The scale to use is determined by the roll chart data. For example: If the mutual conduction of a particular tube is listed as 5400 (5400 micromhos). Set the SHUNT control to the red dot at 87 and read the value of mutual conductance on the 0-6000 micromho scale.

e. RECTIFIERS, DIODES AND THYRATRONS

Rectifier tubes, including diode tubes and diode sections of multiple element tubes, having no mutual conductance are tested for emission only. When the red button marked TEST is depressed, good rectifier and diode tubes will cause the needle on the meter to move above the point marked DIODES OK. In checking thyratrons, such as the 884 and the 885, the BIAS control should be set at 100 which is the highest negative value. Depress the TEST button, and hold down while the BIAS control is gradually turned counterclockwise until the tube strikes, that is, begins to conduct, which is indicated by a sudden deflection of the needle on the test meter. The NOTATIONS column of the roll chart indicates the approximate point at which the tube STRIKES. After the tube STRIKES, or begins to conduct, it should produce a steady meter reading in the GOOD area of the scale.

f. GAS (GRID CURRENT) TEST

Some tubes develop gas after being heated for a period of time. When a tube has a gas condition, the grid current will increase and cause the tube to over-conduct. If a tube is suspected of a gaseous condition, set all the controls according to the data on the roll chart. Depress the red button marked TEST and the button marked GAS. Test meter will now indicate the grid current up to 100 microamps. Grid current in excess of two microamps is undesirable. If the tube being tested causes the needle on the test meter to move more than two small divisions, it should be discarded.

g. LIFE TEST

The purpose of a life test is to determine how long the tube may be expected to perform satisfactorily. Ascertain that all of the controls are set as indicated on the roll chart. Depress the red button marked

TEST and adjust the SHUNT control until the needle on the meter reads in the GOOD sector at 2000 on the 0-3000 micromho scale. Wait until the needle comes to a stop. Hold everything constant, reduce FILAMENT voltage selector one step (see table 2-2). If the needle remains in the GOOD sector of the scale, the vacuum tube has a long life expectancy and will perform satisfactorily.

NORMAL FIL VOLTAGE	REDUCE FIL VOLTAGE TO
1.4	1.1
2.0	1.4
2.5	2.0
3.0	2.5
5.0	4.3
6.3	5.0
7.5	6.3
10.0	7.5
12.6	10.0
17.0	12.6
20.0	17.0
25.0	20.0
35.0	25.0
50.0	35.0

Table 2-2. Filament Voltage Chart

h. TRANSISTORS (NPN or PNP)

Transistors can be tested for leakage currents on the Model 6000A. To test a transistor for leakage, proceed as follows:

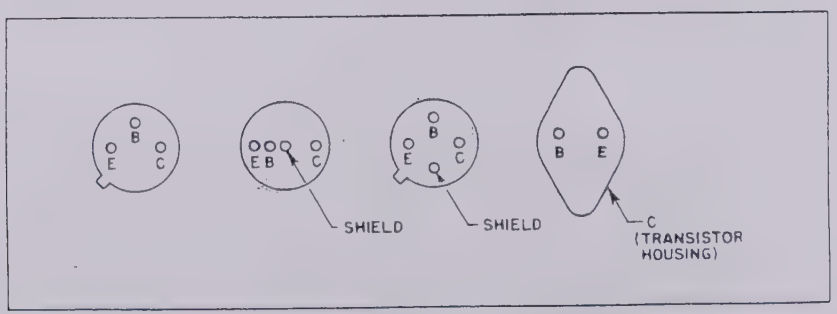


Figure 2-1. Transistor Lead Identification

(1) Rotate POWER LINE ADJUST until the needle on the test meter is directly over the area marked LINE TEST.

(2) Rotate FUNCTION switch to position "H". Meter needle will drop back to zero.

(3) Set the SHUNT control to 100.

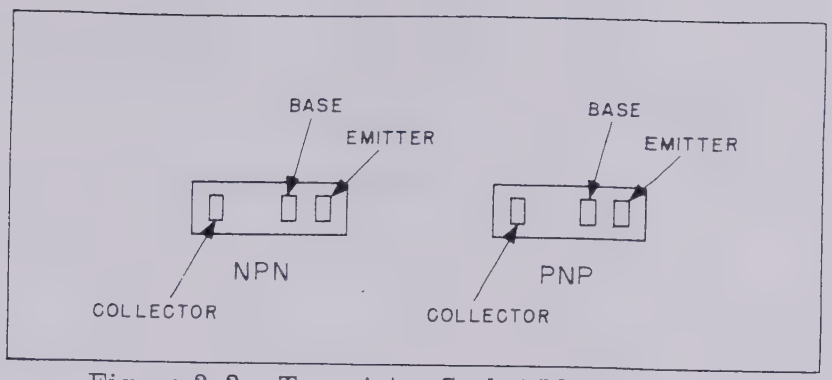


Figure 2-2. Transistor Socket Identification

(4) Insert transistor to be tested into the proper socket (PNP or NPN). Be sure to check the manufacturers data to determine the type of transistor. Transistors can be damaged if placed into the wrong socket. See Figure 2-2 for correct socket identification.

(5) Adjust the SHUNT control until the needle on the test meter reads full scale or 100% on the lower scale. If the test meter fails to indicate an upscale deflection, the transistor is open or defective.

(6) Push the slide switch marked LEAKAGE-GAIN to the LEAKAGE position. Test meter will now indicate the leakage current on the lower scale for TRANSISTORS. If the needle is in the GOOD area the transistor is good, and if the needle is in the POOR area, the transistor should be discarded.

i. RECTIFIER TESTS - COPPER OXIDE, SELENIUM, and SILICON

The red (+) and black (-) jacks, located near the transistor test sockets (lower right hand corner) are used to check the forward to reverse conduction ratio of rectifiers. When testing rectifiers, disconnect them from the circuit under test. Connect the rectifier as follows and make the following adjustments:

(1) Connect the positive lead of the rectifier to the black (-) jack, and the negative lead to the red (+) jack. When connected this way, the rectifier is biased in the forward direction.

(2) Adjust POWER LINE ADJUST until needle on meter is directly over the area marked LINE TEST.

(3) Set SHUNT control to 100.

(4) Set FUNCTION switch to position "H". Needle on meter will drop to zero.

(5) Adjust the SHUNT control for a full scale deflection of the needle on the test meter (100%).

(6) Remove the rectifier from the test socket and reverse the rectifier leads and replace in test socket. The rectifier is now biased in the reverse direction. A meter reading that is 10% or more of full scale deflection indicates a defective rectifier and it should be replaced.

j. DIODE TESTS - SILICON and GERMANIUM

Diodes are checked by the same procedure as testing rectifiers, because they rectify but do not handle large currents like power rectifiers.

Some knowledge of the characteristics of the diode being tested will help because some high conduction diodes used in video detectors can be rated good if they produce a 10 : 1 (10%) forward to reverse conduction ratio.

k. PILOT LAMP TEST (For use with the Accessory Tube Mounting Plate)

The tube mounting plate in Figure 1-1 is used to test pilot lights. This adapter can be mounted in the center of the top panel. To test a pilot light use the seven pin socket in the upper right hand corner of the tube mounting plate, and set the operating controls as follows:

(1) Set the FILAMENT SELECTOR to B.

(2) Set the FILAMENT SELECTOR to X.

(3) Set the FILAMENT voltage selector to the filament voltage of the pilot light.

(4) Insert pilot light to be tested into the center of the seven pin socket, which is mounted on the tube mounting plate.

(5) Pilot light will light if good.

SECTION 3

CIRCUIT DESCRIPTION AND TROUBLESHOOTING

3-1 OVERALL FUNCTIONAL DESCRIPTION

The Hickok Model 6000A is a versatile test instrument containing two full-wave rectifiers. A schematic wiring diagram (figure 3-1) is provided for individual component location. The controls and connectors that appear on the top panel are named on the schematic for easy correlation. The power requirements are provided by a single power transformer operating on either 115 volts or 230 volts.

3-2 TROUBLESHOOTING

The troubles and remedies indicated in Table 3-1 will aid in trouble-shooting.

TROUBLE	REMEDY
Meter does not respond when TEST button is depressed	Check R4, POWER LINE ADJUST for opens or shorts. Check FUSE lamp for a burned out condition. If burned out, replace with No. 81 lamp for 115V operation, or No. 63 lamp for 230 volt operation. Check line cord. Check BIAS FUSE lamp for a burned out condition. If burned out replace only with a No. 49 panel lamp.
SHORTS lamps do not light when tester is turned ON	Check the FUSE lamp. Check neon lamps DS1 to DS5 for shorts or opens.
Tester is turned ON, meter does not respond, BIAS FUSE and FUSE lamp do not light and POWER LINE ADJUST can not make meter respond.	Check tubes V1 (83) and V2 (5Y3) for shorts or opens. Check transformer T1 for burned odor, shorts or opens. Check line cord.

Table 3-1. Troubleshooting Chart

SECTION 4

PARTS LIST

4-1. INTRODUCTION

Reference designations are assigned to identify all parts of the Model 6000A, Dynamic Mutual Conductance Tube Tester. These designations are used in the parts list and schematic wiring diagram. The letter prefix of a reference designation indicates the kind of part -- resistor, capacitor, electron tube, etc.

REF. DESIG.	NAME AND DESCRIPTION	HICKOK PART NO.
C1	CAPACITOR, FIXED, MICA: 2700 uuf, 10%, 500 volts	3095-41
C2	CAPACITOR, FIXED, CERAMIC: .02μ F, 500 volts	3110-148
C3	CAPACITOR, FIXED, CERAMIC: .01μ F, +100 -20%, 500 volts	3110-64
C4-C7	Same as C3	
C8	CAPACITOR, FIXED, PLASTIC: .5 uf, 200V	3105-206
C9	CAPACITOR, FIXED, ELECTROLYTIC: 50 uf, 6 volts	3085-45
DS1-DS5	LAMP: NE2, neon, 65VAC, 90VDC, 1/25 watt, shorts lamp	12270-26
F1	LAMP: #81, bayonet type (for 115 volt operation)	12270-2
F1	LAMP: #63, bayonet type (for 230 volt operation)	12270-58
F2	LAMP: #49 pilot, 2 volts, bayonet type	12270-17
J2	JACK: red, phenolic	10300-47
J3	JACK: black, phenolic	10300-48
M1	METER:	680-298
MP1-MP9	KNOB: bar type, with white dot	11505-46
MP10	KNOB ASSEMBLY: with pointer	11500-11
MP11	DIAL ASSEMBLY: BIAS	4160-67
MP12	DIAL ASSEMBLY: SHUNT	4160-73
P1	PLUG: octal type, black	16525-186
P2	CORD: AC line	3675-34
R1	RESISTOR, FIXED, DEPOSITED FILM: 200 ohms, 1%, 2 watts	18540-5
R2	RESISTOR: 100 ohms, 10%, 10 watts, center tapped	18575-19
R3	Not assigned	
R4	RHEOSTAT: 350 ohms, 25 watts, with off position, LINE ADJUST	18750-37
R5	RESISTOR, FIXED, COMPOSITION: 1200 ohms, 10%, 1 watt	18422-122
R6	RESISTOR, FIXED: 1800 ohms, 10%, 10 watts	18575-12

REF. DESIG.	NAME AND DESCRIPTION	HICKOK PART NO.
R7	RESISTOR, FIXED, COMPOSITION: 15,000 ohms, 5%, 1 watt	18423-151
R8	POTENTIOMETER: 150-150 ohms, wire wound SHUNT control	16925-90
R9	RESISTOR, FIXED, COMPOSITION: 47 ohms, 10%, 1/2 watt	18410-472
R10	Part of R8	
R11	POTENTIOMETER: adjusted, 3000 ohms, BIAS control	16925-6
R12	RESISTOR, FIXED, COMPOSITION: 5-6 megohms, 10%, 1/2 watt	18415-562
R13	RESISTOR, FIXED, COMPOSITION: 3300 ohms, 10%, 1/2 watt	18412-332
R14	RESISTOR, WIRE WOUND: 8500 ohms, 10 watts	18575-89
R15	RESISTOR, FIXED, COMPOSITION: 560K ohms, 10%, 1/2 watt	18414-562
R16	RESISTOR, FIXED, COMPOSITION: 100K ohms, 10%, 1/2 watt	18414-102
R17	POTENTIOMETER: 250K ohms, 1/2 watt, snap-in type	16925-213
R18	RESISTOR, FIXED, COMPOSITION: 12 ohms, 1%, 1/2 watt	18537-59
R19	RESISTOR, FIXED, COMPOSITION: 220K ohms, 10%, 1/2 watt	18414-222
R20	RESISTOR, FIXED, COMPOSITION: 680 ohms, 10%, 1/2 watt	18411-682
R21	Same as R19	
R22	RESISTOR, FIXED, DEPOSITED FILM: 291 ohms, 1%, 1/2 watt	18537-89
R23	RESISTOR, FIXED, COMPOSITION: 220 ohms, 10%, 1/2 watt	18411-222
R24-R28	RESISTOR, FIXED, COMPOSITION: 10 megohms, 5%, 1/2 watt	18416-101
R29	RESISTOR, FIXED, COMPOSITION: 11,000 ohms, 5%, 1/2 watt	18413-111
R30	RESISTOR, FIXED, COMPOSITION: 3000 ohms, 5%, 1/2 watt	18412-301
S1	SWITCH: Part of R4, LINE ADJUST	
S2	SWITCH, ROTARY: 1 section, 2 pole, 20 position (FILAMENT)	19912-338
S3	SWITCH, ROTARY: 5 section, 8 position, (FUNCTION)	19912-375
S4, S5	SWITCH, ROTARY: 1 section, 14 position, (FILAMENT)	19912-477
S6	SWITCH, ROTARY: 1 section, 14 position (GRID)	19912-469
S7	Same as S6 (PLATE)	

REF. DESIG.	NAME AND DESCRIPTION	HICKOK PART NO.
S8	Same as S6 (SCREEN)	
S9	Same as S6 (CATHODE)	
S10	Same as S6 (SUPPRESSOR)	
S11-S13	SWITCH, PUSH: 3 button type	19910-188
S14	SWITCH, SLIDE: DPDT	19911-64
T1	TRANSFORMER: (POWER)	20800-305
V1	ELECTRON TUBE: #83	20875-28
V2	ELECTRON TUBE: #5Y3GT/G	20875-6
XV1	SOCKET: wafer, 4-pin	19350-157
XV2	SOCKET: wafer, octal	19350-156
	ADAPTER: supplied with instrument, 8 tube sockets, mounted on plate assembly	1050-142
	ADAPTER: 8 tube sockets, mounted on plate assembly	1050-145
	MANUAL, INSTRUCTION	2490-586

HICKOK

Model 6000A Parts Price List

Prices listed below are subject to change without notice. A minimum billing charge of $3.50 is in effect. ★
Order by HICKOK PART NO. and list your model number and its serial number on the order blank below.

REFERENCE DESIGNATIONS	HICKOK PART NO.	PRICE EACH
C1	3095-41	$ .46
C2	3110-148	.25
C3 thru C7	3110-64	.31
C8	3105-206	.53
C9	3085-45	.82
DS1 thru DS5	12270-26	.36
F1	12270-2	.23
F1	12270-58	.20
F2	12270-17	.23
J2	10300-47	.31
J3	10300-48	.31
M1	680-298	20.50
MP1 thru MP9	11505-46	.29
MP10	11500-11	.26
MP11	4160-67	.80
MP12	4160-73	.96
P1	16525-186	.62
P2	3675-34	1.75
R1	18540-5	.82
R2	18575-19	.96
R4	18750-37	5.05
R5	18422-122	.25
R6	18575-12	.71
R7	18423-151	.25
R8	16925-90	4.95
R9	18410-472	.25
R11	16925-6	10.50
R12	18415-562	.25
R13	18412-332	.25
R14	18575-89	1.73
R15	18414-562	.25
R16	18414-102	.25
R17	16925-213	.77
R18	18537-59	.68
R19, R21	18414-222	.25
R20	18411-682	.25
R22	18537-89	.50
R23	18411-222	.25
R24 thru R28	18416-101	.25
R29	18413-111	$ .25
R30	18412-301	.25
S2	19912-338	2.75
S3	19912-375	4.76
S4, S5	19912-477	5.25
S6 thru S10	19912-469	2.42
S11 thru S13	19910-188	7.17
S14	19911-64	.70
T1	20800-305	26.45
V1	20875-28	4.20
V2	20875-6	1.75
XV1	19350-157	.25
XV2	19350-156	.25
Adapter	1050-142	33.00
Adapter	1050-145	33.00
Instruction book	2490-586	

Code No. 16110-8

Use This Form For Ordering Parts

ORDER BLANK

★ NOTE: Minimum Billing $3.50

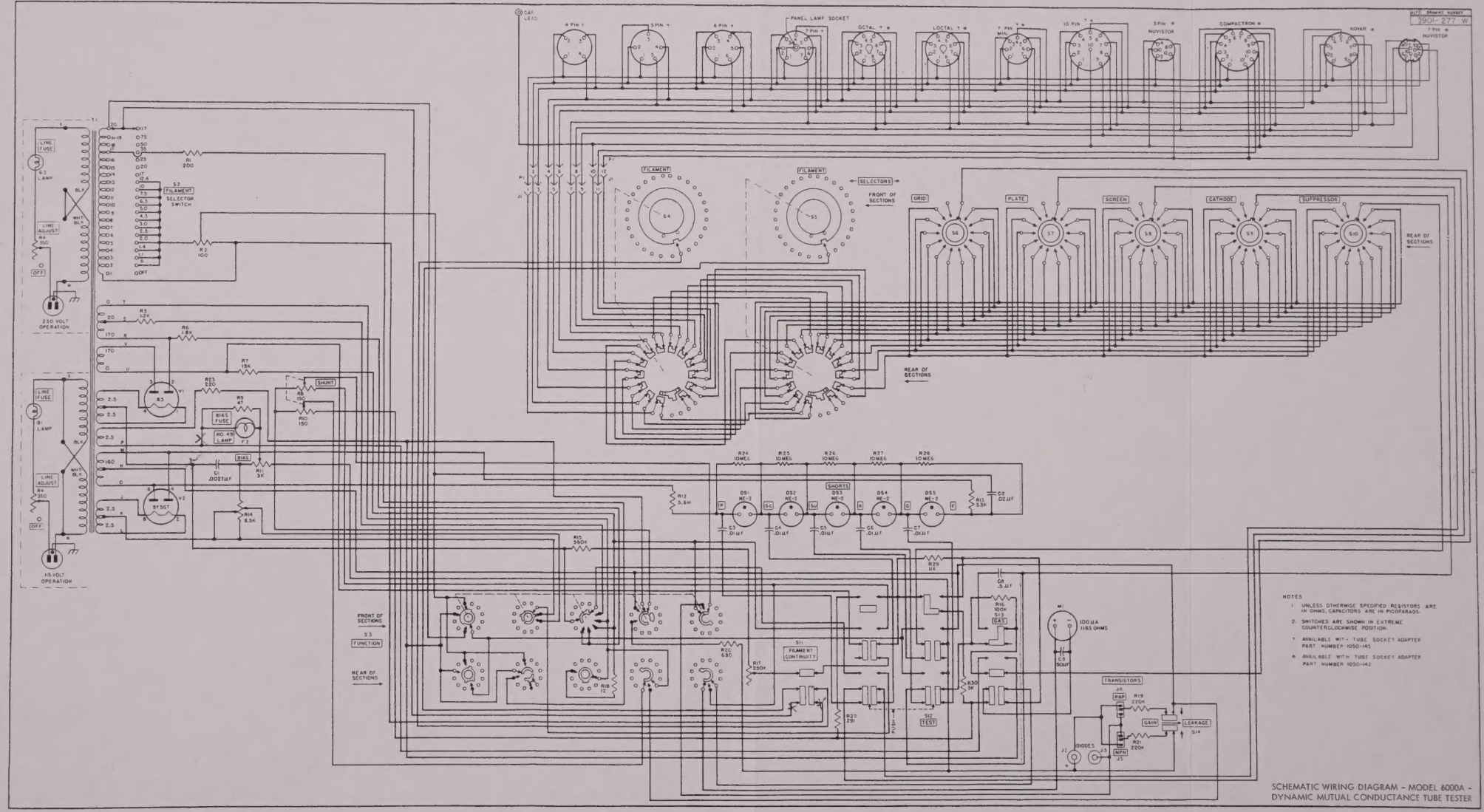
MAIL TO: Parts Department
Hickok Electrical Instrument Co.
10514 Dupont Avenue
Cleveland, Ohio 44101

Your Model Number	Serial Number	REPLACEMENT PARTS REQUIRED Hickok Part No.	Ref. Desig.	Qty.	Price Ea.	TOTAL PRICE	AMOUNT ENCLOSED	BILL ME
								★

Code No. 16110-8

Ship Parts To: _____
Street or P. O. Box: _____
City & State: _____ Zip: _____

Invoice To: _____
Street or P. O. Box: _____
City & State: _____ Zip: _____



SCHEMATIC WIRING DIAGRAM - MODEL 6000A - DYNAMIC MUTUAL CONDUCTANCE TUBE TESTER